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Impacts and place-based approaches to transformative energy justice for First Nations

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Abstract

Place-based approaches to renewable energy transitions tailor solutions to specific social, cultural, economic and ecological contexts inherent to particular localities. Drawing on transformative energy justice frameworks and approaches, we argue that place-based framings and interpretations of impacts of community renewable energy projects provide the means to center Indigenous worldviews, observations and experiences of justice associated with these projects. This co-created study draws on interviews with knowledge holders in 14 First Nations across the Province of British Columbia (BC), Canada. Interview participants shared experiences and observations on both the process (community engagement) and outcome (impacts and benefits) dimensions of 36 operational and planned renewable energy projects, pointing to a rich diversity of social, political, material, economic, ecological and relational impacts. Across a wide range of project sizes and technologies, the findings indicate that deep community engagement and the collective decisions for allocation of revenues mediate the positive and transformative impacts experienced by the community. Taken collectively, these findings show that First Nations approaches to developing projects are place-based, ensuring a wide range of impacts to the community that can collectively contribute to transformative change. In the broader context of systematic neglect of social, environmental and justice-oriented values in public policy making, and amidst widespread failure of 'decide-announce-defend' approaches to achieving social acceptance for renewable energy projects, this study demonstrates what distinguishes place-based approaches in practice, and how they deliver transformative outcomes for First Nations. Policy, project and resource allocation decisions should reflect the diverse impacts and transformative outcomes of renewable energy projects in First Nations contexts. We conclude that embedding place-based approaches in institutional arrangements, policy and project design is critical to providing economic opportunities to First Nations without discrimination under the United Nations Declaration on the Rights of Indigenous People, alongside meeting BC's power needs and decarbonization goals.

1. Introduction

The spatial roll-out of renewable energy has significant equity implications (Sasse and Trutnevyte 2019, Regier *et al* 2025). Rural areas and regions play a vital role in the development of renewable electricity generation and transmission infrastructure that will be needed to enable energy system decarbonization (Balta-Ozkan *et al* 2015, Naumann and Rudolph 2020, Hoicka *et al* 2021a). In Canada, the electrification needed to decarbonize transportation and heating sectors would see significant expansion of electricity grids (Dion *et al* 2022), requiring as much as $500 billion in investment by 2050 (Thomas and Green 2022). If managed inclusively, this transition to renewable electricity can enable opportunities for just

transitions through participation by Indigenous Nations and organizations and can potentially provide opportunities for reconciliation with colonial governments (MacArthur *et al* 2020, Gall *et al* 2022).

The setting for this study is the Province of British Columbia (BC), in Canada, in which there are 203 First Nations. Many of these First Nations view the United Nations Declaration on the Rights of Indigenous People (UNDRIP) as a foundation from which to advance renewable energy projects that simultaneously support decarbonization and energy security for the Province, as well as self-determination and socioeconomic wellbeing for First Nations (Lovekin *et al* 2021). Opportunities for First Nations-led renewable energy projects are heavily influenced by the evolving institutional and policy context in which they are embedded (First Nations Major Projects Coalition 2025, First Nations Major Projects Coalition and Mokwateh 2025). In 2019, BC passed the Declaration on the Rights of Indigenous Peoples Act (DRIPA), which requires provincial laws to be consistent with UNDRIP and may provide pathways for First Nation communities to improve their economic and social conditions without discrimination (Nichols and Morales 2021). DRIPA has created a political entry point to advocate for novel policy and governance arrangements that can unlock opportunities for transformative energy justice within BC's broader decarbonization agenda—where the regional energy transition would be led by impacted and traditionally excluded communities, and infrastructure development would be embedded in First Nations' rights and values (Peng 2024, Hoicka *et al* 2025b).

Community renewable energy projects can lead to positive impacts, including a wide range of local environmental, social and economic impacts that underpin community wellbeing. These impacts range from income, knowledge and skills, livelihoods and employment benefits that can drive broader rural socio-economic regeneration processes, as well as improved social cohesion (or 'social capital') and community empowerment, to improved access to affordable electricity, energy literacy and increased local support for renewable energy (Berka and Creamer 2018). These outcomes depend on the governance and ownership model, how revenue is allocated to local benefits and whether these benefits are collective or only for select members of a community (Slee 2020). However, our understanding of social impacts and outcomes of projects on communities, what shapes these outcomes and how they are mediated by wide-ranging ownership and implementation models remains poor (Slee 2015, 2020, Berka and Creamer 2018). An international meta-review of 203 studies showed the social impacts of climate and energy policies are seldom measured, and when measured, often fall short of delivering positive social impacts (Lamb *et al* 2020).

In 2022, the Clean Energy Association of BC (CEBC)[5] and the New Relationship Trust [6]-the study's research partners—procured funding from the Ministry of Natural Resources Canada Clean Energy for Rural and Remote Communities Program to conduct research to address the limitations to information about the impacts of renewable energy projects that is used for making decisions about renewable energy procurement. According to CEBC, 'The provincial government and BC Hydro[7] do not have information regarding socio-economic and environmental benefits and impacts of various types of electricity supply projects relative to First Nations and communities. At this time, long-term electricity supply planning criteria for socio-economic and environmental factors are limited to only direct jobs and physical footprint respectively.' Requesting funds for 'research [in this area] is important to fill a public policy information gap.' (Clean Energy Association of British Columbia 2021). Driven by a need to address this policy information gap, the focus of this study[8], and its contribution, was to develop a rich and detailed understanding of the impacts and benefits of First Nations led renewable energy projects that is based on each Nation's own conceptions of these by interpreting interview responses through a place-based lens. A window of opportunity for First Nations led renewable energy projects recently appeared in response to projected shortfalls in low-carbon electricity to meet BC's climate mitigation targets[9], and to protectionist trade measures such as Trump-era tariffs. BC issued a series of electricity procurement calls, while the

[5] CEBC (Clean Energy BC) is a Canadian non-profit organization focused on promoting clean energy development and investment in British Columbia.

[6] The New Relationship Trust (NRT) is a self-reliant and politically neutral Indigenous-led organization that delivers First Nations funding using an effective, reliable, and credible funding platform that is utilized as a third-party program delivery hub on behalf of the Federal and Provincial governments.

[7] BC Hydro is the main owner and operator of the province's (mainly hydropower) generation, and of high voltage transmission and low voltage distribution networks, and is also the largest electricity retailer in the province, serving 95% of the province's population (BC Hydro 2022).

[8] In a separate study, we provide an understanding of the underlying drivers that shape Indigenous leadership in renewable energy, which range from deficits in the provision of electricity, housing, education, and health as experienced by many of these Nations, to barriers to socioeconomic development, and lack of institutional control at the regional scale (Hoicka et al., 2025).

[9] The Province of British Columbia, Canada, has ambitious climate change targets that in 2021 were estimated to require between 10.9 TWh and 19.1 TWh additional electricity supply by 2030 (Kasteel 2021, Lovekin *et al* 2021).

federal Government of Canada positioned large-scale infrastructure investment as a key driver of economic growth[10]. Some of these opportunities involve First Nations. Our findings provide an understanding of the transformative potential of renewable energy transitions locally and regionally that utilities and governments can use in policy development.

However, top down, technocratic and 'decide-announce-defend' approaches to energy infrastructure development dominate energy project development and have been widely identified as major sources of injustice to affected communities, by excluding them from meaningful involvement, imposing power asymmetry in access to information and decision-making and eroding trust and legitimacy (Ducsik 1981, Wolsink 2000, Walker and Baxter 2017, Nilson *et al* 2024). The socioeconomic impacts of energy projects on nearby or host communities as well as the transparency of what these impacts are and how decisions for the siting of energy projects are made, are linked to social acceptance of these projects by communities (Rand and Hoen 2017). In summary, the anticipated socioeconomic impacts and the process of the development of an energy project figure prominently not only in policy development but also in conceptions of energy justice.

Understandings of energy justice have drawn heavily on concepts of distributive justice (of impacts and benefits) and procedural justice (who is included in the process) that originate from Western liberal political philosophy, and evolved out of Western values and principles of individualism, universalism, rationalism and objectivity. Scholars of environmental and energy justice have integrated the work of critical theorists (Fraser 1995, Honneth 1996) to include recognition justice and highlight the importance of diverse identities and social positions (Heffron and McCauley 2017). Consequently, there is a growing consensus that energy justice principles must be more explicitly integrated into policy design to ensure that the costs and benefits of the energy transition are shared fairly, that complex societal challenges are addressed and that public support for decarbonization is maintained (Lamb *et al* 2020).

However, these conceptions of justice are grounded in Western epistemologies that obscure relational, ecological and place-based understandings of justice and the contemporary resurgent struggles of Indigenous Peoples (Corntassel 2012, Coulthard and Alfred 2014). Indigenous Peoples have inherent relationships to the land and territories that they occupied prior to settler colonial intrusion, and they have distinct and ancestral social, economic or political systems, language, culture and beliefs (United Nations n.d.). UNDRIP outlines that 'Indigenous Peoples have the right to maintain and strengthen their distinct political, legal, economic, social and cultural institutions, while retaining their right to participate fully, if they so choose, in the political, economic, social and cultural life of the State.' (United Nations 2007). In Canada, each Métis Nation, First Nation and Inuit community or government has their own distinct culture, language, legal orders and traditions. Consequently, Indigenous scholars and activists argue that climate and energy action, policy and research affecting Indigenous contexts need to be grounded in their own philosophies, ontologies, and epistemologies (McGregor 2018, Deranger *et al* 2022, Lembi *et al* 2025). The application of UNDRIP and Free, Prior and Informed Consent (FPIC) is argued to provide the means for Indigenous Nations to consent to infrastructure projects on their traditional lands (Scott 2020). The absence of FPIC has been connected to forcing Nations to accept projects that will go ahead, with or without benefits to them (Scott 2020).

Indigenous conceptions of justice inform transformative approaches to energy justice that center critical and marginalized voices, adopt a rights based approach, address root causes of inequalities and shift the balance of power and governance (Elmallah *et al* 2022, Avelino *et al* 2024). Transformative energy justice acknowledges the spatial differentiation of interpretations and ontologies of justice that vary widely across communities and contexts (Elmallah *et al* 2022) and recognizes the utility of place-based research methods to pluralize and diversify these ontologies (Galende-Sánchez and Sorman 2021, Lembi *et al* 2025, Hoicka *et al* 2025b). A place-based ethical framework based on grounded normativity can diversify and decolonize the ontologies of justice present in current research and praxis (Tornel 2023).

[10] For example, the BC government and BC Hydro have announced the procurement of renewable electricity projects. For example, as this research was conducted, in 2023, BC Hydro announced a new call for power will seek to acquire 3000 GWh per year from new greenfield facilities from '100% clean, renewable energy' to be commercially operational by the end of 2028 (Ministry of Energy, Mines and Low Carbon Innovation 2024, Ministry of Energy, Mines and Low Carbon Innovation 2023). The announcements identify the important role First Nations can play in generating renewable electricity, in assisting in the province's decarbonization effort and the opportunity to support Indigenous self-determination (BC Hydro 2023d, p 202; Ministry of Energy, Mines and Low Carbon Innovation 2023). In 2024 a plan for $36 billion of investment for community and regional infrastructure projects to deliver clean electricity to consumers and related infrastructure for decarbonization was announced. This includes new high-voltage transmission lines, upgraded generating facilities, and infrastructure to support high-growth areas with residential housing and transit electrification (Ministry of Energy Mines and Low Carbon Innovation 2024).

Drawing on transformative energy justice frameworks and approaches, we argue that place-based framings and interpretations of impacts of community renewable energy projects provide the means to center Indigenous worldviews, observations and experiences of justice associated with these projects.

In this study, we employ a place-based lens as a means to understand and articulate the impacts of renewable energy projects of several First Nations in BC based on their own conceptions, worldviews, and meanings. We draw on interviews with knowledge holders who have direct experience in 36 renewable energy projects that are either operational or under development to document the community engagement practices and the perceived and anticipated impacts of renewable energy projects. These interviews provide valuable insights into both the process (community engagement) and the outcomes (impacts and benefits) of these projects to explore how they are contextualized within the cultures, worldviews, and sense of place of the Nations themselves. The findings are informative for policy design and project implementation and contribute to the body of literature focused on transformative approaches to energy justice, by centering voices that have been traditionally excluded.

This empirical study is novel in that the research was initiated by, and designed with, two intermediary organizations that work in partnership with many First Nations to take a regional approach to supporting their advocacy efforts (Lovekin *et al* 2021, New Relationship Trust 2021, Peng 2024, Hoicka *et al* 2025b). As such, the study employed a co-creation approach, characterized by collaborative and iterative knowledge production, action and societal change processes between researchers and other societal actors (Galende-Sánchez and Sorman 2021, Chambers *et al* 2022, Rowan *et al* 2024, Lembi *et al* 2025).

In what follows, we describe the distinguishing features of place-based approaches to renewable energy and the factors driving their emergence. We unpack the argument that place-based approaches provide a framework for understanding the impacts of community renewable energy projects in ways that make space for non-Western perspectives, offering a means to de-center dominant technocratic paradigms in policy design and project implementation and deepen our understanding of the transformative potential of community renewable energy for First Nations. The remaining sections outline the methodology and distinguish approaches to research with First Nations. The results document the community engagement practices and the perceived and anticipated impacts of 36 planned and operational renewable energy projects with involvement of these distinct First Nations. In the discussion we explore how these are framed within the culture, worldviews and sense of place of the Nations' themselves. Our findings contribute to broader discussions on reimagining energy systems through transformative energy justice, grounded in the values and practices of First Nations. We consolidate these findings to inform the design of institutions, policies and programs for energy transitions with First Nations, emphasizing local values and connections to place.

2. Place-based approaches to renewable energy and infrastructure development

The concept of 'place' is fundamental to human geography. It refers to 'a particular location in the world that has meaning for individuals and communities. It is a complex holistic term that combines physical, ecological, political, economic, social and psychological attributes' (Devine-Wright and Ryder 2024, p 2), including the unique and sometimes intangible characteristics of sounds, smells, culture and relationships within and to other places (Cresswell 2014). 'Place-based approaches' are gaining prominence in both academic and practitioner energy circles as an approach focused on solutions that are tailored to the specific place-attachment, social, cultural, economic and ecological context of particular locations (Devine-Wright and Devine-Wright 2009, Moore-Cherry *et al* 2022, Devine-Wright and Ryder 2024, Weller *et al* 2024, Lai *et al* 2025). Because energy transitions are inherently geographic processes that manifest differently across space, an epistemological approach that centers place opens avenues for critical analysis of spatial differentiation, including uneven socioeconomic opportunities and impacts, and carries significant implications for climate change policy and governance (Bridge *et al* 2013, Lehmann *et al* 2024).

Collectively, place-based approaches can be seen as a response to the challenges and critiques associated with top-down approaches characterized by centralized technocratic decision-making, uniform place-agnostic policies and large-scale infrastructure (Hoicka 2025, Ptak *et al* 2025). A rich body of evidence documents the shortcomings of place-agnostic approaches to energy project development. A lack of meaningful community engagement early in a project's development processes often leads to perceptions that engagement at a later stage lacks authenticity or fairness (Elmallah and Rand 2022). Renewable energy project development processes that are perceived to be unfair decrease social acceptance for renewable energy development (Rand and Hoen 2017, Hoen *et al* 2019, Mills *et al* 2019, Saglie *et al* 2020, Nilson and Stedman 2023, Bessette *et al* 2024, Hogan 2024). For example, conventional

'decide-announce-defend' processes for planning energy projects, in which the relevant details of a project—particularly siting details—are planned prior to their announcement to the affected public have been shown to have a polarizing and offending effect on communities situated close to proposed projects (Ducsik 1981, Wolsink 2000, Nilson *et al* 2024). Despite a rich evidence base on what shapes social acceptance, community opposition remains a significant and internationally widespread cause of project delays and cancellations (Comeau 2022, Comeau *et al* 2022, Susskind *et al* 2022, Nilson *et al* 2024). This international evidence base points to the importance of the degree of local control, ownership and voice in decision-making in shaping public support for energy developments, where local participation can instigate innovative mechanisms to generate locally specific benefits and outcomes from energy projects (McLaren Loring 2007, Hicks 2020, Hogan *et al* 2022, Walker *et al* 2024).

Place-based approaches to energy infrastructural development pay attention to the specifics of the unique and particular geographical context, the social relations unfolding in which energy research and development are occurring as well as the context-specific relationships to energy and the politics and policies governing it (Apollo Alliance 2004, Devine-Wright and Devine-Wright 2009, Moore-Cherry *et al* 2022, Leonhardt *et al* 2023, Devine-Wright and Ryder 2024, Weller *et al* 2024). The influence of locally pertinent social issues, place-attachment and identity on opinions about energy developments within and across communities is significant (Hurlbert 2022, Loengbudnark *et al* 2025). For example, in 2025 a survey in Australia demonstrated that people's support for projects is shaped most strongly by their general attitudes toward renewable energy and by whether they believe these initiatives deliver tangible and context-specific community benefits, such as improved energy supply resilience, or pathways to participation and access to renewable energy technology (Loengbudnark *et al* 2025). Hurlbert (2022) documents how support for coal development in an already highly industrialized community in Saskatchewan was much greater than in other, less fossil-fuel attached regions of the province, showing that community energy futures framings are entwined with place-attached, holistic, and inter-generational thinking. The development of renewable energy projects then becomes contingent on a place-based approach to land-use planning that considers local perspectives on context-appropriate project outcomes, site selection, design and technology (Hurlbert 2022). A central feature of place-based approaches is therefore the implementation of meaningful engagement with communities located close to a project's proposed site at early stages of project development (Fast and Mabee 2015).

Place-based literature has more recently turned to questions of how to embed local context, participation and justice within large-scale energy infrastructural programmes and system-wide transitions in the contexts of increasing renewable energy market share, resilience, network infrastructural constraints and land-use (O'Neil *et al* 2022, Ndi 2024, Pickering and Chalaye 2025, Hoicka *et al* 2025a). These approaches demonstrate how effective and holistic energy policy at regional and sub-national levels should consider diverging opinions and impacts across places (Hurlbert 2022). Through an acknowledgement that places are not isolated and confined, but are profoundly interconnected, place-based approaches are amenable to integrated planning at local and regional levels (Hurlbert 2022, Devine-Wright and Ryder 2024).

'Place-based at scale' approaches have emerged as pragmatic and instrumental approaches to integrating local knowledge and governance into broader renewable energy programmes (O'Neil 2022, Hoicka *et al* 2025a). By embedding community priorities within local or regional planning frameworks, and embedding renewable energy configurations within existing community capacities and institutions, these approaches enable the development of multifunctional and decentralized energy landscapes, designed to mitigate harm for ecosystems, enhance procedural and distributive justice, strengthen local resilience and create local value (O'Neil *et al* 2022). Place-based approaches offer a wide range of potential benefits, from aligning projects to local social, cultural, and ecological contexts, to local legitimacy and trust, to environmental, social and economic co-benefits (O'Neil *et al* 2022). By designing policies and projects that work for specific places, place-based approaches can address local socio-economic challenges and provide tangible benefits to both workers and communities (Lai *et al* 2025). As such, place-based approaches are better equipped to address inequities and account for the social and political dimensions of energy transitions (Bridge *et al* 2013). Place-based approaches therefore carry significant implications for policy and governance, requiring allocation of resources for inclusive community visioning and deliberation processes as well as extensive vertical and horizontal co-ordination (e.g. Berka *et al* 2025).

2.1. Place-based approaches to Indigenous Nation participation and transformative energy justice

Irrespective of colonial recognition, Indigenous people, whether First Nations, Inuit or Métis, whether living on traditional territories or not, are connected to land and place. This sense of place exists even when a community or Nation is displaced to reserve land that may not overlap their traditional lands

(Hoicka *et al* 2021c). Traditional territories have been passed on from time immemorial and through cultural practices such as hunting, fishing, trapping and harvesting (Malone and Chisolm 2016). Because Indigenous worldviews are relational, place is not only defined through human relationships, but also through human and non-human relations on traditional land (Velasco-Herrejón *et al* 2022). This connection to place has in specific instances been acknowledged under colonial law through treaty rights (Albers 2017). Place-based approaches are fundamentally connected to Indigenous resurgence, as 'being Indigenous today means struggling to reclaim and regenerate one's relational, place-based existence by challenging the ongoing, destructive forces of colonization. Whether through ceremony or through other ways that Indigenous peoples (re)connect to the natural world, processes of resurgence are often contentious and reflect the spiritual, cultural, economic, social and political scope of the struggle.' (Corntassel 2012, p 88). Energy infrastructural developments can impact place-based 'cultural intangibles' of 'religious aspects of culture (that manifest themselves within different environmental contexts) including rituals, beliefs, articulations of autochthony, language, dance, folklore and Indigenous Knowledge Systems' (Matanzima and Loginova 2024, p 101478).

Place-based approaches create space for meaningful examination and acknowledgement of the dynamic historical and ongoing relationships between people and places, and they are considered fundamental to centering the voices and worldviews of historically excluded communities in problem framing and decision making, and to addressing the root causes and legacies of inequality (Elmallah *et al* 2022, Avelino *et al* 2024, Lembi *et al* 2025). Place-based approaches can focus on heterogeneous local and Indigenous knowledge and stewardship, community needs, the redistribution of benefits, knowledge sharing, and opportunities for self-determination (Elmallah *et al* 2022, Hoicka *et al* 2025b). In a thematic analysis of community documents, Elmallah *et al* (2022) observe that 'local realities', or place-based framings, should inform energy research and policy to advance justice according to diverse ontologies of justice that exist on the ground. Taking a place-based participatory co-design approach for research on electrification in Brazil, Lembi *et al* (2025) find that place-based approaches create avenues to identify practical applications of energy justice and energy sovereignty, demonstrating that they are fundamental to achieving transformative energy justice in practice.

There is extensive literature on Indigenous engagement in renewable energy development and its benefits that recognizes the desire for self-sufficiency and self-determination, reflects the local context and the relationships between people and the natural world, and illustrates place-based perspectives, even if not explicitly stated (Rezaei and Dowlatabadi 2016, Cook *et al* 2017, Rakshit *et al* 2019, Stefanelli *et al* 2019, Bullock *et al* 2020, Mang-Benza and Baxter 2021, Smith and Scott 2021, Chitsaz 2022, Savic and Hoicka 2023, Yalamala *et al* 2023, Mang-Benza *et al* 2024, Peng 2024). Although many of these studies do not explicitly identify place-based approaches to understanding the dynamics of Indigenous involvement in renewable energy development, they reflect characteristics of such approaches. These studies reveal how Indigenous-led renewable energy initiatives are, at least in part, driven by First Nations' aspirations to overcome their historical and ongoing colonial experiences through increased self-determination (Rezaei and Dowlatabadi 2016, Rakshit *et al* 2019, Smith and Scott 2021, Savic and Hoicka 2023, Yalamala *et al* 2023, Peng 2024). For instance, scholars have surveyed attitudes, aspirations, approaches, and barriers to renewable energy development across many Nations and contexts in Canada (Bullock *et al* 2020, Savic and Hoicka 2023), in B.C. (Cook *et al* 2017, Peng 2024), and in remote, diesel-based BC communities (Rezaei and Dowlatabadi 2016). Studies assess community values, worldviews and engagement before renewable energy projects begin (Rakshit *et al* 2019, Chitsaz 2022) and after projects are completed (Mang-Benza and Baxter 2021, Smith and Scott 2021, Mang-Benza *et al* 2024). Relevant secondary research has demonstrated cumulative evidence on the significance of meaningful engagement, sovereignty and self-sufficiency (Stefanelli *et al* 2019, Yalamala *et al* 2023). First Nations have experienced a breadth of economic and legal barriers to developing renewable energy projects due to colonial institutions like the Indian Act (Krupa 2012). Within this context, as a method to overcome barriers to development, Indigenous Economic Development Corporations (EDCs) emerged as a model for economic development across various sectors, such as forestry and tourism, including development and ownership of renewable energy projects (Savic and Hoicka 2023). Interviews with 14 community leaders and residents of Batchewana First Nation in the Province of Ontario, as well as project consultants and project staff, showed that a 58 MW, 26-turbine wind project on the Batchewana First Nation's traditional territory was driven by the community's desire to enhance self-reliance and assert jurisdiction over its territory, reflecting a 'sense of belonging' through a visible continuation of the Batchewana First Nation's relationship with the land. (Smith and Scott 2021). The project was driven by the motivation to create land-based opportunities while upholding the Nation's social, political and legal orders

Table 1. Summary of relevant drivers and motivations of place-based approaches to renewable energy to First Nations contexts.

Indigenous resurgence:
-The struggle to reclaim and regenerate the relational, place-based existence of Indigenous Peoples by challenging the destructive forces of colonization through ceremony or through other ways that Indigenous Peoples (re)connect to the natural world, reflecting the spiritual, cultural, economic, social and political scope of the struggle of this struggle of reclamation (Corntassel 2012, p 88).
-Protecting religious aspects of culture (that manifest themselves within different environmental contexts) including rituals, beliefs, articulations of autochthony, language, dance, folklore and Indigenous Knowledge Systems (Matanzima and Loginova (2024).
Holistic and material
-Tailored to specific place-attachment, social, cultural, economic and ecological context of particular locations (Devine-Wright and Devine-Wright 2009, Devine-Wright and Ryder 2024, Lai *et al* 2025, Moore-Cherry *et al* 2022, Weller *et al* 2024).
-Incorporate multifunctionality and decentralization, mitigate harm for ecosystems, address justice and local resilience and create local value (O'Neil *et al* 2022).
Place-attachment
-Diverse ways in which communities are engaging with renewable energy and associated infrastructure, place is defined by the social relationships in a particular location, encompassing a 'sense of belonging' in a 'community as place' (Walker 2011, Creamer *et al* 2018).
-Community and land attachment remain strong for Indigenous people even when living away from their traditional lands (Mang-Benza *et al* 2024).
-Highly variable, place-attached, holistic and inter-generational thinking (Hurlbert 2022).
Local value creation
-Can address local socio-economic challenges and provide tangible benefits to both workers and communities (O'Neil *et al* 2022, Lai *et al* 2025).
Transformative energy justice
-Can address root causes and legacies of inequality, voices and worldviews of historically excluded communities are centered in problem framing and decision making and transition processes (Elmallah *et al* 2022, Avelino *et al* 2024, Lembi *et al* 2025).
-Creates avenues to identify practical applications of energy justice and energy sovereignty (Lembi *et al* 2025).
-Heterogeneous local and Indigenous knowledge and stewardship, community needs, the redistribution of benefits, knowledge sharing and opportunities for self-determination (Elmallah *et al* 2022, Hoicka *et al* 2025).
-Reveals desire to create land-based opportunities while upholding the Nation's social, political and legal orders and principles and fulfilling the community's obligations to steward their land and consider future generations (Smith and Scott 2021).

and principles, and fulfilling the community's obligations to steward its land and consider future generations (Smith and Scott 2021). The recognition of this First Nation's relationship with the land highlights the importance of place-based approaches to understanding Indigenous involvement in renewable energy initiatives.

Mang-Benza and Baxter (2021) sought to understand 'the lived experience of people living with wind turbines' seven years after a 4 MW 2-turbine wind power project became operational on M'Chigeeng First Nation on Manitoulin Island, in Ontario. They conducted interviews with 28 M'Chigeeng First Nation members and four residents (people who live on the reserve but are not First Nation members and have no voting rights in band affairs). Their work highlights the importance of place histories in the understanding of communities' responses to renewable energy. Three years later, they conducted a survey of 157 M'Chigeeng First Nation citizens who were located both on and off reserve. They found that community and land attachment remain strong for M'Chigeeng First Nation citizens even when living away from their traditional lands (Mang-Benza *et al* 2024).

The approaches and findings from such studies are summarized in table 1. These support the argument that place-based approaches are effective in illustrating how energy policy design influences transformative energy justice outcomes relevant to Indigenous Peoples. Applying place-based research to examine the impacts of existing Indigenous Peoples' involvement in renewable energy projects is useful for shaping future policy design and understanding how Indigenous Peoples can improve their economic and social conditions without discrimination.

3. Methods

Using co-creation approaches, this study was designed with the research partners and employed semi-structured interviews and thematic analysis to learn about community engagement practices and perceived, experienced and anticipated socioeconomic impacts and benefits of renewable energy projects, in

addition to how these are framed within the culture, worldviews and sense of place of participating First Nations. The focus of the interviews and document analysis was to document the project details, motivations, community engagement processes, pre-conditions and socioeconomic benefits of renewable energy projects in the participating Nations.

3.1. Partnership research and funding

The research was developed to support advocacy for First Nations in the BC renewable energy sector, CEBC and the New Relationship Trust are organizations that work directly with First Nations across BC. CEBC obtained funding from Natural Resources Canada's clean energy for Rural and Remote Communities Program, Capacity Building Stream, a federal government program and used this to hire the university researchers. This study took a co-creation approach to research and the study design was developed by the university researchers with CEBC and the New Relationship Trust to extend the findings of a survey of 72 First Nations conducted by Clean Energy BC in 2021.

Working with the partner to develop appropriate research questions, direction and design follows ethics principles for academic research with First Nations as outlined by Canada Tri-Council Policy Statement 2 (Canadian Institutes of Health Research *et al* 2023) and by the principles of ownership, control, access and possession (OCAP(R)) provided by the First Nations Information Governance Centre (n.d.). Chapter 9: Research Involving the First Nations, Inuit, and Métis Peoples of Canada of the Tri-Council Policy Statement 2 (2022) 'is not intended to override or replace ethical guidance offered by Indigenous peoples themselves. Its purpose is to ensure, to the extent possible, that research involving Indigenous peoples is premised on respectful relationships. It also encourages collaboration and engagement between researchers and participants' (Canadian Institutes of Health Research *et al* 2023). OCAP(R) principles apply to all aspects of First Nations information, from creation through management (Schnarch 2004).

CEBC and the New Relationship Trust indicated the need to learn from First Nations pursuing renewable energy projects in a short timeframe, and they identified interviews as the appropriate method. Interviews with Indigenous people should be inclusive and accommodative of Indigenous culture, often in person, conversational, relational and land based (Phatshwane 2024). However, in keeping consistency with earlier interviews conducted by CEBC virtually during the pandemic, the partner organization directed researchers to conduct this phase of interviews virtually, although some took place in-person at the CEBC First Nations energy summit. Conducting interviews with a sample of First Nations participants aligned with the research goals to support advocacy efforts.

3.2. Recruitment

Recruitment efforts sought to identify First Nations that had at least one operational renewable energy project. Interview participants were considered a knowledge holder or expert through their direct involvement in the project or in a project under development.

CEBC emailed 42 First Nation members to invite them to an interview. In addition, at an annual in-person First Nations Energy Summit organized by CEBC in January 2023, the principal investigator presented the research project and invited summit attendees to participate in interviews, either on-site during the event or to be scheduled at a later date. After the Summit, the Indigenous registrants were contacted by CEBC and invited to an interview. Some interview participants identified additional contacts and shared these with members of the research team. Over this time, knowledge holders and experts from First Nations with projects under development reached out to participate in the interviews. They were included to provide insight into pre-conditions and community engagement for First Nation's energy projects.

3.3. Ethics

Each First Nation has their own unique protocol for consenting to research projects. For example, some Nations have a dedicated ethics staff, or rely on consent from elected officials. For this reason, for each interview, researchers received consent both from the community based on their own protocols, as well as from each interview participant. Each First Nation and individual participant was given the option to waive anonymity and exclude their data from peer-reviewed research. In accordance with OCAP(R) principles, the collated data for each First Nation was returned once analysis of all data was complete (The First Nations Information Governance Centre n.d.).

3.4. Interviews

The three interviewers had previous research experience and training in interviewing Indigenous participants. Interviews were audio-recorded, and transcribed using Zoom. Transcripts for each interview

Table 2. Interview questions about motivations, benefits and impacts.

How the project came about, how it evolved and who was involved
• What is your involvement with the project and how long have you been involved? • What motivated you to become involved? • Why is this project important to you? • How did the First Nation become involved in working in this renewable energy project? • Were there turning points, or key milestones, in the life of the project? • Were any partnerships critical in the success of the project? • To what extent was the wider community involved in the development of the project?]
Motivations and impacts
• What kinds of benefits has your community experienced as a result of this renewable energy project? o Which of these are most important and why? • Did these benefits meet, fall short of, or exceed your expectations? (e.g., for job creation, local sourcing of materials and services) o How many jobs were directly created as a result of this project (from construction, maintenance & operation to management)? o Did you source any products, material and services for the project locally? o Has the project supported the development of other projects or business endeavors in the community or region (agriculture, manufacturing etc.)? If so, what are these, and how? (e.g., through power provision, land and capital inputs) (If so, do you know of any jobs created by these activities?) o Are any project revenues allocated to the First Nation community? How are these revenues being spent? For example, in the form of community trust, grants, scholarships, sponsorships, community development programmes, etc. o What impacts are revenues having on First Nations as a result of this? • Did the project deliver any other or unexpected benefits, for example in terms of new knowledge and skills, better understanding of energy issues? • How has the project changed or influenced the First Nation? • How has successfully implementing this project shaped future ambitions and aspirations for the First Nation? • Has this project had wider influence in the region or country? How do you believe that your project contributes to the wider British Columbia energy system? • Why are First Nations, community-led projects in British Columbia important and distinct? • In your experience, which governance structures offer stronger socioeconomic benefits from renewable energy to your community?

were emailed to the respective interview participant to confirm accuracy and content shared. Each interview lasted approximately 1–1.5 hours and took place between 2 December 2022 and 29 March 2023. For Nations that did not waive anonymity, a numbered pseudonym was assigned (e.g. 'Nation #1') and all identifying information (such as names and locations) was removed from the analysis.

3.4.1. Interview instrument

The interviews employed a semi-structured instrument. The questions were informed by relevant literature, other interview instruments and impact evaluation materials (Savic and Hoicka 2023, Berka n.d., Clean Energy BC n.d.). The interview questions are provided in table 2. The questions were neutrally worded and gave room for discussion of critical barriers to development of new or additional projects faced by communities in the electricity sector. The interview questions asked participants about their personal motivation and involvement in the energy project, how the project was conceived and how it evolved in the community, turning points and critical milestones, how communities were involved and to identify the critical sources of support or partnerships. Questions relating to motivations, early processes and milestones of projects all contribute to documenting the pre-conditions of energy projects. The questions also asked about the benefits or impacts experienced by the Nation as a result of the project's development or implementation, how the Nation may have been changed as a result of the project and the broader influence that the renewable energy project may have on the renewable energy context at a regional or national scale. Questions were phrased in an open-ended manner to prompt responses that were most relevant, culturally appropriate or important, in participants' own words, although there were prompts if needed as seen in table 2.

Participants were invited to share secondary documents about their Nation's renewable energy project, such as reports, summary documents, videos, presentation slide decks and a Community Energy Plan. These documents were also included in data analysis and were used to supplement interview data.

Table 3. Finalized list of themes used to code benefits and outcomes following inter-rater reliability.

Impact categories	Impacts
Social, political	Social cohesion
	Sense of pride
	Resurgence
	Organizational learning
	Capacity building
	Autonomy
	Independence
	Self-determination
	Empowerment
	New imaginaries
	Recreation
Material	Infrastructure
	Supply resilience
	Access to affordable electricity and healthy homes
Economic	Local procurement of materials and services
	Training and employment
	Project revenues
	Socio-economic regeneration
Ecological	Emissions mitigation
	Displacing fossil fuels
	Cleaner air
	Reducing power consumption
	Reduced noise
	Reduced fire hazard
	Ecological benefits
Relational	Global niche development
	Setting precedent
	External networks
	Education/awareness in external parties
	Reconciliation
	Knowledge sharing
	Visibility
	Influence

Thirteen additional documents were shared by four Nations participants, and additional information about each project was found in other databases (Hoicka *et al* 2021b) and from internet searches.

3.5. Coding and analysis

For this analysis, the interview transcripts and secondary documents were imported into qualitative research software and coded. Through a combined deductive and inductive approach, the initial thematic codes were identified based on the literature and interview instrument, were adapted and emergent codes were developed based on the interview transcripts.

In total, 24 benefit and outcome codes were applied to the interview and additional documents, identified in table 3. The initial codebook, which included all benefits and outcomes listed in table 3, with the exception of 'sense of pride', and definitions were established based on the interview instrument and in line with high-level barriers, motivations and impacts as identified in the literature and the survey run by CEBC in 2021 (Berka and Creamer 2018, Brummer 2018, Mang-Benza and Baxter 2021, Bielig *et al* 2022, Savic and Hoicka 2023, Yalamala *et al* 2023).

Meetings were held between the two coders for the data to identify and agree upon consensus codes. In the first meeting, coders met to identify the data coding process using data analysis software. In the second meeting, coders reviewed the data coding process and the initial codebook (including the list of codes with definitions). Following this meeting, the coders independently coded the same interview transcript, noting potential emergent codes that were not included in the initial codebook. The code 'uncertain' was used to identify excerpts of the transcript that coders were unsure which code to apply to, to flag these excerpts for further discussion between coders. In the third meeting, the coders reviewed their

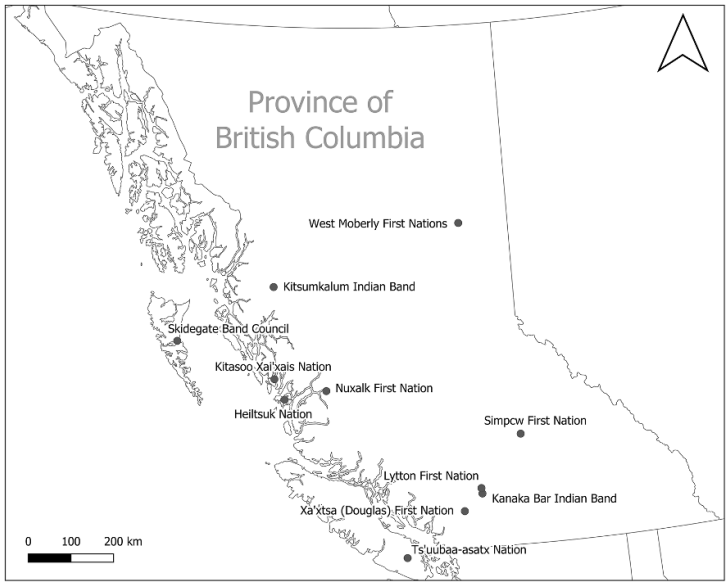

Figure 1. Map showing location of the First Nations participating in this study (made in qGIS).

code patterns for this first interview transcript to compare and identify any inconsistencies in definitions or interpretations of codes or excerpts from the transcript, as well as emergent codes. Through this discussion, the coders agreed on codes and definitions for the remaining transcripts, adding the emergent code 'sense of pride' as benefit, and 'anticipated benefits' and 'realized benefits' parent codes to distinguish between benefits that had been experienced by participants through their existing projects and those that were anticipated (which include the benefits Nations without operational benefits shared anticipating). To ensure inter-rater reliability, the process of independently coding a transcript and meeting to compare and update the code book was repeated a second time, and in the fourth meeting the coders addressed questions and uncertainties and reviewed any inconsistent application of codes to come to a consensus on how to apply codes. Following this, the coders independently coded the remainder of the transcripts and materials.

Excerpts and associated codes from transcripts and additional documents were exported from the coding software upon completion of coding. Summary tables were made using these exported excerpts by benefit code, as outlined in table 3. Direct quotes were paraphrased to clarify their meaning for analysis in some cases, using details from other sections of the transcript (for example, replacing the word 'they' with the specific organization being referred to). Quotes are attributed to the respective Nation of participants rather than the participant themselves, as they had received approval from their Nation to share information and were being asked about their Nation's energy projects by our research team.

4. Results

A total of 20 interviews were conducted with members and citizens of 17 First Nations (including 2 participants from one Nation), as well as 1 consultant and 1 organization operating in the sector. Of the 20 participants, 17 (14 Nations, 1 consultant and 1 organization) consented to being involved in peer-reviewed research and are included in this analysis. The 14 First Nation participants and their respective renewable energy projects are mapped in figure 1 and outlined in table 4.

Table 4 outlines the project characteristics such as project size, technology type, the type of land it is sited on, the ownership structure and the legal actor involved in the ownership or benefits structure. Most of the Nations that have both operational and planned projects have involvement from the EDC, whereas for the Nations with only operational projects, the political organization, such as the elected band council, more often tends to be involved. There are a range of structures of ownership and control. Several Nations have no ownership or minority ownership of large projects with royalties agreements, whereas other Nations have a controlling share of ownership of their projects.

Eleven of the First Nations engaged the community using a variety of methods (table 5). All of the Nation's engagement methods included the provision of information, regular updates and engagement of the community to inform them about the project and address concerns such as the protection of

Table 4. Project characteristics.

Nation	Share owned	Technology	Capacity (MW)	Use	Year of operation	Legal actor	Land type
Nations with operational and planned projects							
Nation #1	100%	Heat pumps	52 homes	Home, community building energy efficiency	2021	EDC	Reserve
		Hydro	1	Sell electricity	Planned 2025		Reserve, crown
Nation #2	0% impact benefit agreement with royalties	Hydro	235	Sell electricity	2010	EDC	Traditional
			62		2016		
			47	Not shared	Not shared		
	100%	Solar	Planning	Self-consumption	Planned		Reserve
Kanaka Bar Indian Band	50%	Hydro	49.9	Sell electricity	2014	EDC	Traditional
	100%	Solar	0.1	Self-consumption	2016		
		Wind	0.0008		2019		
	50%	Hydro	1.8	Sell electricity	Planned		
	100%	Wind	0.03	Self-consumption			
Skidegate Band Council	100%	Heat pumps	360 homes	Home energy efficiency	2015	Political	Traditional
		Solar	0.246	Self-consumption	2015		
	33%[1]	Hydro	6	Sell electricity	Planned		
		Solar	2	Planned			
West Moberly First Nations	15% limited partnership	Wind	15	Sell electricity	2021	Not shared	Crown
	100%	Solar	0.5	Planned	Planned	Political	Reserve
Nations with operational projects (none planned)							
Nation #3	100%	Solar	0.02	Self-consumption	2017	Political	Reserve
Heiltsuk Nation	100%	Heat pumps	410 homes	Home energy efficiency	2018	Political	Reserve

(Continued.)

Table 4. (Continued.)

Nation	Share owned	Technology	Capacity (MW)	Use	Year of operation	Legal actor	Land type
Kitasoo Xai'xais Nation	100%	Hydro	1.7	Self-consumption	2021	Political	Traditional
	100%	Solar	0.023		2015		Reserve
	100%	Heat pumps	40 homes	Home, community (lodge, museum) energy efficiency	2022		
Lytton First Nation	100%	Solar	0.07	Self-consumption	2019	Political	Reserve
Simpcw	0% ownership with royalties agreement	Hydro	20	Sell electricity	2011	EDC	Traditional
Xa'xtsa Nation	Partial[2]	Hydro	150	Sell electricity	2009	Not shared	Traditional
	0% participation agreement with royalties	Hydro	21.2		2015	Political	
			40.6		2016		
			27.5		2022		
Nations with planned projects (none operational at time of interview)							
Kitsumkalum Band	100%	Hydro	8	Planned	Planned	EDC	Traditional
			5				
Ts'uubaa-asatx Nation	Planned	Hydro	Project details were under development				
		Solar					

(Continued.)

Table 4. (Continued.)

Nation	Share owned	Technology	Capacity (MW)	Use	Year of operation	Legal actor	Land type
Nuxalk Nation	100%	Biomass	783MWh /year	Planned	Planned	Political	Reserve
		Heat pumps	Planned	Home energy efficiency			
		Hydro	2	Sell electricity			Traditional
		Solar	0.199	Planned			Reserve

Table 4 Legend

1 Equal partnership between 3 First Nation Councils: Old Massett Village Council, Skidegate Band Council, and Council of the Haida Nation.

2 Partial ownership, at the end of a 60 year agreement the community will own 100% of two projects.

Legal actor legend

Political: the political organization of a community, such as an elected Band Council (Savic and Hoicka 2023)

EDC: an Indigenous EDC is a for-profit business entity that pursues opportunities on behalf of a First Nation. Community members comprise the entirety of an EDC's shareholders, making it directly accountable to the First Nation. In First Nations, the political organization establishes EDCs with the approval of the community. As of 2023, there were 294 Indigenous EDC's among nearly 700 First Nations, Inuit, and Métis communities (Savic and Hoicka 2023).

Land type legend

Reserve: many First Nations were displaced from their traditional lands in exchange for living on reserve land (Albers 2017). Reserve land is 'Crown land held in trust for First Nations and may or may not overlap with traditional lands' (Imai 1999).

Traditional: areas historically occupied or used by Indigenous Nations for activities such as ceremonies, hunting, fishing and trapping (Indigenous Corporate Training 2019). UNDRIP recognizes the inherent rights of Indigenous Peoples to free, prior and informed consent regarding projects on their traditional lands.

Crown Land owned by the provincial government. This type of land is available to the public for industry, recreation and research. (Government of British Columbia n.d.).

Financial participation

Royalty payments: involve allocating a percentage of project revenue in exchange for the use of First Nations' water, land or resources.Impact and benefit agreements: privately negotiated, legally binding contracts that establish formal relationships between First Nations and industry proponents outlining how the First Nations will share in the benefits of the operation (Kielland 2015).

Table 5. Community engagement details by nation.

Nation	Community engagement
First Nations with operational and planned projects	
Nation #1	While developing the project, the key values of the Nation were kept front and center of the projects, and they undertook strategic planning with meaningful engagement rooted in the Nation's worldview, culture and language. There was a community gathering in 2001 when Nation members were asked what they wanted and their values regarding the hydro project. Five key values were articulated, one being to protect Coho salmon at the hatchery that is part of the watershed that would be the subject of the hydro project. The Nation wanted the project to be Nation owned and a source of economic development, protect fish populations with a 2-way fish ladder, and protect the community and global environment. Any opposition was managed by engagement through newsletters, community meetings, regular updates to Chief and Council, and developing a website so that people could see project progress.
Nation #2	The project site was in a remote part of the territory and initially encountered some social opposition related to environmental concerns. These concerns were put to rest as the projects were run of river with a small impact, and no fish stocks were to be threatened. The hydro electricity projects kicked off economic development related to ecotourism businesses in the area, and these economic benefits generated support for the project from Nation members.
Kanaka Bar Indian Band	The Band's members were engaged for over 36 years in the development of their Kwoiek Creek Hydro Project. The solar and wind projects began with 12 years of community engagement to gain social acceptance for clean energy projects in the Nation. The members were involved in each step of the project process. Members were involved in aspects of decision making such as where pipes should go, where transmission lines were laid and baseline data studies.
Skidegate Band Council	For their heat pump project they brought in staff from BC Hydro to teach Nation members about managing electricity bills online and curbing household usage. This taught people that heat pumps were an efficient solution for their households and increased awareness. There was some pushback from the community when clean energy projects were first introduced as there were unknowns. For example, people were hesitant to implement solar as there are few sunny days. Once installations on community buildings began, people were shocked at the cost savings and supported the project.
West Moberly First Nations	The partner on the project, Natural Forces, approached the Nation first to introduce the wind project, the potential impacts to land and treaty rights and the economic potential. Once these discussions were held the Nation and partner proceeded with building the wind project.
First Nations with operational projects (no planned projects)	
Nation #3	There was no community engagement as the solar project on the firehall was small-scale (0.02 MW). There would be community engagement if there were a large scale energy project being planned, and that would include community consultation and input.
Heiltsuk First Nation	Over 1000 Nation members were engaged over 2 years to develop a comprehensive Community Energy Plan. Their extensive engagement strategy included visioning sessions, online consensus building surveys, coffee shop sit-ins to encourage survey participation, open houses, active social media, website updates, YouTube videos and newsletters. This resulted in 10 community priorities articulated into the community energy plan that the clean energy association (a non-profit consulting organization that supports local governments and Indigenous communities in energy and climate action) now uses as the gold standard for community energy plans and engagement when supporting other communities.

(Continued.)

Table 5. (Continued.)

Nation	Community engagement
Kitasoo Xai'Xais Nation	The Climate Action Coordinator for the Nation engages with the community for projects that reduce greenhouse gases or will have a positive environmental effect. The Nation is on board with clean energy projects, and every homeowner was consulted and educated on heat pump use for their homes.
Lytton First Nation	The Nation was involved in the project through the Board and Chief and Council, which is the governing body of the Nation that needs to approve all projects and represent the people.
Simpcw	Community members were sent information packages about energy projects. Open houses were held without project proponents and Nation members were able to ask questions and vote on decisions through a third-party managed voting process. There were discussion and question periods after project presentations to answer questions and address concerns about impacts to rights and title and the environment.
Xa'xtsa Nation	Required that the original developer for hydro projects conduct regular meetings with the members. They told the developers that if they wanted to be in the community working they had to be a part of it. This led to the developer spending several years getting to know the Nation and gaining their acceptance.
First Nations with planned projects (no operational projects)	
Kitsumkalum band	The Nation was generally very supportive of clean energy project planning, and participated in working groups and annual meeting presentations. Information was also presented through social media, and there is always an invitation for Nation members to participate in project planning.
Ts'uubaa-asatx Nation	Developed a Community Energy Plan based on engagement and input from the community. Leadership met with Nation members in person and over Facebook and asked them what they wanted to see so that leadership could ask experts if it was feasible. The Nation leadership would not have done feasibility studies for clean energy projects without Nation support.
Nuxalk Nation	The run of river project began with a series of open houses to inform the Nation of the amount of diesel being burned annually (2.2 million L yr^{-1}) and the amount of emissions produced. This was a wakeup call for the Nation and there was a resounding agreement to move forward with the project. The Nation had a Climate Action Coordinator conducting engagement on a climate adaptation plan for the Nation, and they also engaged with the school and their board about energy usage. The Nation had an electrical engineer from BC Hydro demand management visit the Nation and found that the school buildings accounted for 7% of the entire energy usage on reserve, making it the largest power consumer. This was presented to the Nation and the solar project planning began. There was an open house in summer 2022 with over 200 people that supported the run of river project, and another round of engagement in March 2023. The clean energy team puts out monthly project updates to keep the Nation engaged.

fish populations, or how much energy was used by community buildings. Some Nation's methods were extensive in reach, such as those of Heiltsuk First Nation. The experience of socioeconomic benefits was reported by Nation #2 (ecotourism) and Skidegate Band Council (reduced costs) to have improved project acceptance. Members of Kanaka Bar Indian Band and Simpcw were given control through voting, and involvement around all project siting decisions. Xa'xtsa Nation required the project developer to participate in relationship building with the Nation members.

The self-reported benefits are reported by project stage. At the time of the interview, three of the Nations, Kitsumkalum Band, Ts'uubaa-asatx Nation and Nuxalk Nation, only had planned projects, none were operational. In table 6 we outline the anticipated benefits of planned renewable energy projects for these three Nations. Nuxalk Nation expressed already having experienced benefits from pursuing energy

Table 6. Ongoing and anticipated benefits of planned First Nations projects.

Social cohesion, sense of pride	• Ts'uubaa-asatx Nation anticipates that clean energy projects would be something that the Nation can feel proud of and that they are doing something that is good for the environment.
Organizational learning, capacity building, setting precedent	• Kitsumkalum Band anticipates a project could result in education and improved community understanding for how people can reduce power consumption. The Nation is trying to connect with groups to have assessments done on all houses on the reserve on things like furnace installation, perimeter drains, fans,and windows. The Nation highlights grants and information that can be used to provide education to Nation members about their homes and energy requirements. • Heiltsuk Nation 'Yes, just the cheaper power, and I think a big part of that is also education. And how can you reduce your power consumption? So a couple of weeks ago I met some people like Ecotrust and that group that installs the heat pumps in Bella Bella. And so we are trying to hook up with groups like that now to get a health passport for every house that we have on the reserve and say: you know, what do we need to do here? How's the furnace? How's the installation, perimeter drains, fans, windows, you know all that kind of stuff. I think you cannot have a conversation about just power projects without re-education, and looking at your own infrastructure to, you know, have, like there's so much out there right now that is, in grants and information, and help to go from door to door and just check every house and every person educate them.' • Nuxalk Nation has been able to increase capacity for wages and equipment owned by the Nation. They have held informational sessions for Nation members to provide education on solar and other energy info, and hands-on training for solar installation.
Autonomy, independence, self-determination, empowerment, new imaginaries	• Nuxalk Nation members are feeling empowered that leadership is taking initiative. The participant's team is being looked to by neighbors and community members to support them. • Interview Participant: 'it is definitely an empowerment situation, our people are feeling very empowered that our leadership and our team is taking the initiative to displace that in our backyard. And it is really empowering that you know people are looking towards us, our neighbors. We are looking towards how established we are as a team, and you know they are looking to us to kind of support them. So it is very important to be a part of this process.'
Access to affordable electricity and healthy homes	• Kitsumkalum Band hopes to have a cheaper supply of power to the reserve, or maybe even free.
Training and employment	• Nuxalk Nation hopes to train some young Nation members to support the work being done by Urban Systems on projects, so that there is less reliance on Urban Systems coming to the area, which is expensive. Their hydro project could generate a few full-time jobs and some contract work. They would need 2–3 people to run the biomass facility, 1 person to run the heat pump program and maintenance and there are additional training opportunities for solar projects.
Local procurement of materials & services	• Kitsumkalum Band will aim to source locally with community suppliers (from within the Nation or the region).
Project revenues	• Kitsumkalum Band hopes to sell the surplus electricity to the local grid or even neighboring communities. • Ts'uubaa-asatx Nation anticipates financial benefits from potential revenues.
Socio-economic regeneration	• Kitsumkalum Band hopes that future projects would be 100% Kitsumkalum run and managed. They are educating Nation members on how power consumption can be reduced and assessing community infrastructure. They are trying to work with organizations to get a health passport for every house on reserve and determine what needs to be done in terms of upgrading furnaces, insulation, drains, fans and windows. Networking from the community trying to figure out a way forward with projects has been helpful. The Nation has met a lot of people and obtained ideas by meeting with other people in a similar situation.

(Continued.)

Table 6. (Continued.)

	• Nuxalk Nation accredited training opportunities for Nation members for the solar project were scheduled at the time of the interview. Residents of the upper valley would also benefit from the hydro project as there is no power producing facility in the area currently. The potential hydro project would provide a power source that would help assist downtime of the electrical grid when power is out.
Displace fossil fuels, reduce noise, reduce power consumption	• Nuxalk Nation currently has a diesel generator that can be heard running at all times. Nuxalk Nation anticipates that the clean energy projects will allow the Nation to displace diesel and not have to rely on a generator to power community homes. • Kitsumkalum Band anticipates a project could result in improved community understanding for how people can reduce power consumption.
External networks, education, visibility, influence	• Nuxalk Nation's neighbors are seeing how established the Nation is and are looking to them for support.

Table 7. Benefits experienced by communities with operational projects (no planned projects).

Social cohesion, sense of pride, resurgence	• Heiltsuk First Nation: the project supported traditional Heiltsuk values, increased self-sufficiency and is making the community a better place to call home. Collaborative and inclusive leadership with meaningful membership and leadership input gives voice to the people and builds a trusted relationship between the leadership and the community as they are able to trust what leadership is doing on their behalf. • Kitasoo Xai'Xais Nation: the region has advanced climate management plans, and there is great work being done. The Nation has had their own hydro for 40 years that supports the community. • Simpcw: economic benefits of clean energy projects stay in the region, and this has built up trust, respect, and a good business reputation within the regional business community. The Simpcw Heritage Fund, which is long-term savings that supports training youth, rebuilding language and culture, and preserving history—all priceless to the Nation. • Xa'xtsa Nation: the Nation has experienced increased community meeting attendance. Interview participant: 'We brought the community together, our community meetings before these projects, just to on a good day would maybe draw about 20 people […]. Some of our meetings and our numbers are down because of what's coming out of COVID but our last meeting we had 136 members signed up, signed in 40 children, and there were 33 guests that signed in.'
Organizational learning, capacity building, setting precedent	• Simpcw: the hydro project allowed the Nation to create best practices for how they conduct business, and they can use that as a template for future projects. They created their own Economic Development Council with clear separation between business and politics and set up the Simcpw Heritage Fund. They gained knowledge of how to develop business models that benefit the Nation and their partners. They are a small rural Nation that have competitive advantages such as tax benefits and close relationships with community political decision makers. Project development taught the Nation about having the right people in the right places and getting good advice, and they used this principle to succeed in other projects. • Xa'xtsa Nation: projects gave Nation members experience they needed to move into other industries when the projects are completed. Many previous employees have transitioned into the Nation's logging company, and some have moved on to other areas.

(Continued.)

related initiatives such as grant programs and training programs (such as the Indigenous Clean Energy Catalyst program), despite not having an operational project.

Table 7 outlines self-reported benefits for Nation #3, Heiltsuk Nation, Kitasoo Xai'xais Nation. Lytton First Nation, Simpcw and Xa'xtsa Nation that have operational projects only.

Table 8 outlines self-reported benefits for Nation #1, Nation #2, Kanaka Bar Indian Band, Skidegate Band Council and West Moberly First Nations that have both planned and operational projects.

Table 7. (Continued.)

Autonomy, independence, self-determination, empowerment, new imaginaries	• Lytton First Nation: the solar project reduced dependence on the BC Hydro grid and the Nation generated their own power in their own backyard. • Heiltsuk First Nation: the heat pump project was a pivot to climate action and unleashed new clean energy opportunities as outlined in the Community Energy Plan, creating a more positive future for next generations. • Kitasoo Xai'Xais Nation: the hydro project allows the Nation to be independent and have its own grid. • Simpcw: clean energy projects support the Nation's goals to become financially independent and not rely on outside sources to do things that are important to the Nation, such as rebuilding language, culture and history. They would not have to write grant proposals to ask for money from people that do not understand the community or appreciate the language and culture.
Training and employment	• Nation #3: no jobs were created as the solar project was too small (20 kW on firehall) and only required a small construction team. • Heiltsuk First Nation: the Nation held training for 5 or more members to become heat pump installation and maintenance technicians, and for one member to be a certified energy advisor. There are employment opportunities for heat pump trainees 4 jobs for a 2 year time period were created, including the Project Coordinator role and 3 heat pump trainees. A capacity development strategy has been created for positions in future projects. • Kitasoo Xai'Xais Nation: The heat pump project employed an external contractor for the past 15 years. • Simpcw: employment was not a big part of the discussion in terms of operation and maintenance. There were not many opportunities for employment at these stages, more focus on the financial benefits. There were few Nation members involved in construction, and there was a learning curve with technical expertise on the construction side and figuring out how the community could maximize its participation in construction. 300 people work directly for Simpcw EDC, 50 employed in the band office and the CEO of EDC is from the Nation. • Xa'xsta Nation: there was employment of 450 people during peak construction in a remote community (30–40 Nation members).
Infrastructure, supply resilience, access to affordable electricity and healthy homes	• Nation #3: as a result of the solar project, the Nation has experienced reduced electricity costs. The solar supports emergency operations out of the community firehall, allowing the Nation to be proactive in emergencies. The project also benefits the entire region, which experiences electrical shortages, by increasing the resilience of the local grid. • Kitasoo Xai'Xais Nation: hydro expansion allows the Nation to continue supplying energy to its own microgrid. Their home energy efficiency project enabled the Nation to build homes and increase building energy efficiency. • Heiltsuk First Nation: the energy project involved providing new, efficient heating systems in homes (supporting development of residential infrastructure) and delivered significant cost savings on monthly household BC Hydro bills. The climate action team has led the Nation in creating a framework called Healthy Heiltsuk Homes to increase health, safety, and quality of life. • Kitasoo Xai'Xais Nation: cost savings from heat pumps for household electricity bills. Safe and reliable heat from heat pumps improves quality of life. • Lytton First Nation: the solar project showed the Nation that clean energy projects 'can be done and installed and functioning so that there is a benefit for the community and for the school in the area' (quote from Lytton First Nation), providing free, clean energy generated from a consistent and reliable source.
Project revenues	• Simpcw: the EDC made $200 million profits in the past few years and has the potential to be a $1 billion company shortly. This brings opportunities to purchase large tenures in territory, such as joint venture partnerships with a heli-ski operation. • Simpcw: part of the money earned from clean energy projects goes into Simpcw Heritage Fund. • Xa'xtsa Nation: power companies developed the hydro projects and power sold to BC Hydro with an EPA as part of their participation agreement the Nation receives royalties which are percentages of revenues (1%, 2.5%, to 5% in 20 year increments), resulting in large cash payments to the community. Royalties from hydro projects are given as cash payments to the Band: 40% goes into bank for the future and 60% is spent on other projects and can be used to compensate members for attending general assembly meetings.

(Continued.)

Table 7. (Continued.)

Socio-economic regeneration	• Heiltsuk First Nation: there have been business opportunities for heat pump trainees to service the remote community without bringing in external support. • Xa'xtsa Nation: supports remote community population growth. Community work ethic and growth after logging industry decline has been re-established. • Simpcw: tax-free status as First Nations EDC can be used to leverage partnerships and build assets, hire and train their own people to manage and operate clean energy projects. The Nation used learnings from the hydro project development to hire a consultant to participate in meetings with the project proponent and consequently signed $600 million worth of contracts through negotiations around the Trans Mountain Pipeline for fossil fuel development.
Emissions mitigation, displacing fossil-fuels, ecological benefits.	• Nation #3: the project helps to offset reliance on burning wood for heat (to reduce carbon footprint). • Heiltsuk First Nation: using cleaner, more efficient technology supports the goals of the Community Energy Plan. Reduced GHG emissions from heating by switching off diesel, the community has to bring in less diesel by barge to a remote area. • Kitasoo Xai'Xais Nation: reduced reliance on oil. A spill occurred 10 years ago with $10 million in damage to the community and ecosystem. Oil spills are a huge concern and led to the development of the heat pump initiative. • Xa'xtsa Nation: one requirement of the hydro project was to build fish channels that increase fish populations.
External Networks, Education/Awareness in External Parties, Visibility, Influence, Knowledge Sharing, Global Niche Development, Reconciliation	• As a result of their energy project, Heiltsuk First Nation experienced increased visibility and presence in the Canadian climate arena, opportunities to present at conferences and increased First Nations representation nationally. • Heiltsuk First Nation: the Nation has been contacted by many Indigenous communities to look at the model of project they used, which is based on scaling up a previous model used by a different Nation. • Heiltsuk First Nation: the level of collaboration, willingness and understanding from partners that have worked with the community is an example of what reconciliation looks like in action today. • Simpcw: non-Indigenous communities and businesses in the region that the Nation works are recognizing the Nation as true owners of the land.

Table 8. Benefits experienced by First Nations with operational and planned projects.

Social cohesion, sense of pride, resurgence, Recreation	• Nation #1: the Nation will be putting in berry patches along the new roadway to the hydro site as the Nation members are prolific berry pickers. The road will also be a source of recreation for ATVs, snowmobiles and fishing. • Nation #2: the project contributed to a sense of pride and increased Nation confidence, as without Nation support and partnership the project would not exist. • Kanaka Bar Indian Band: the Nation's members were involved in each step of the process. The Nation did the work for the projects alongside professionals and it brought back the community identity, confidence and self-esteem. Engagement of members in the project work put smiles on people's faces and increased self-worth and pride. • Skidegate Band Council: more people are moving to Haida Gwaii as they have seen how the Nation is and the work they have done regarding clean energy projects and want to be a part of it as well. • West Moberly First Nations: there was a sense of pride in ownership and involvement, and the wind project opening ceremony was a proud moment with elders in attendance. There was strong community support for the project and they were able to complete it even through the COVID 19 pandemic.
Organizational learning, capacity building, setting precedent	• Nation #1: the Nation hired a full time Climate Action Coordinator that is a resource to the Nation if they have clean energy questions or concerns, especially with their heat pumps. • Kanaka Bar Indian Band: the project increased the Nation's professional and technological capacity in business development, computer skills and mapping. Nation members that received training now have transferable skills and this is important in an area where there are seasonal fluctuations in employment, high unemployment and nominal subcontracting and procurement opportunities.

(Continued.)

Table 8. (Continued.)

Autonomy, independence, self-determination, empowerment, new imaginaries	• Nation #1: First Nations led clean energy projects are distinct because of the potential for self-determination and they speak to the resilience of communities. • Kanaka Bar Indian Band: Kanaka Bar makes decisions through a climate change lens. The renewable energy project aligned with community principles of sustainability and built capacity—these impacts are multigenerational. • Skidegate Band Council: revenue will support future development for the company and minimize their dependence on outside contributions for future projects. As they are in early stages of project development, they are not sure how revenues will be utilized, but revenues may go back into the company for the next venture, as there will be times that the Nation will need its own financial contributions for future projects as they will not always be 100% funded. • West Moberly First Nations Participant: 'it feels good to be involved in ownership as opposed to sitting here watching everything get done you know, by somebody else owned by somebody else. And basically we just sit and live with the impacts. You know what I mean; we are involved in it, and we are engaged in it, we are co-owners. And I know our elders feel really good about you know, hearing that. You know, knowing that we are not just sitting on the sidelines, while other people fill their pockets in our territory. And our community is doing that, you know, is involved in that kind of stuff more and more. There is a connection there, right, because you are involved. More money is flowing to the community'
Supply resilience	• Nation #1: in a document shared by Nation #1, renewable energy projects are discussed as expanding grid capacity and facilitating growth, creating energy sovereignty and security for remote communities. • Kanaka Bar Indian Band: the community resilience plan is about becoming 100% community-based renewable energy and flowed from the results of the Kwoiek Creek Hydro project. It consists of 7 planning areas that look at all projects, short and long-term. There is a resilience plan to build up projects over the next 5 years and build sustainable resilience for water, food, shelter, energy, transportation, communications and waste management. • Skidegate Band Council: many people have homes on the oceans that have low-voltage issues as the connections on the telephone poles corrode. The Nation has trained people to understand those issues and now has more power technicians so that the power only goes out for a few hours during storms when it used to be out for days. Skidegate is working with BC Hydro to create solutions for BC Hydro and the Nation for better quality and stable power.
Infrastructure	• Nation #1: additional documents shared by the Nation discuss the development of new assets and improving infrastructure through the diversification of local economies tied to renewable energy projects. The Nation plans to use project revenues to build new infrastructure such as a Coast Guard facility, hotel and daycare center. • Nation #2: infrastructure laid by the energy projects (e.g., roads) removed upfront costs for other businesses which allowed for the establishment of an ecosystem of businesses in the Nation's remote location (e.g., bear tourism). • Kanaka Bar Indian Band: development of additional renewable energy infrastructure as a result of existing Nation projects.
Access to affordable electricity and healthy homes	• Nation#1 has experienced hardship from high electricity costs in a BC Hydro non-integrated remote area. They hope to take revenue from the project to offset expenses people have from high energy costs. Heat pumps have been installed in every building in the community and now all residents have more comfort and better air quality in their homes. The Nation is still studying heat pump impacts as they were only installed in 2021, so do not know the degree of energy savings yet. • Skidegate Band Council: people are getting more air circulating in homes due to heat pumps, reducing mold, providing cleaner air and resulting in cost savings of up to 52% for some homes. Community buildings with solar panels installed now have very low energy bills besides the surcharge for a meter.

(Continued.)

Table 8. (Continued.)

Local procurement of materials and services	• Nation #1: during construction of the hydro project they will use a community quarry to source materials and make cement. Services will be provided by the Nation in the form of accommodation, meals and camp services. Local cedar was used for artistic purposes and signage, and they will use local food. • Skidegate Band Council: not many materials have been sourced locally as it is a remote island Nation. • West Moberly First Nations: gravel for the wind farm was sourced locally based on a partnership between the Nation and another company.
Project revenues	• Nation #1: once the hydro project is generating revenues all revenues will go to the Nation through the economic limited partnership corporation. • Nation #2: the revenue sharing agreement in the impact and benefits agreement supports Nation operations, programs and financial goals. • Kanaka Bar Indian Band: Kwoiek Creek Hydro project allowed the Nation to generate its own source revenues. The Nation gets revenues through the Clean Energy Business Fund, but also leases the land to the hydro project, adding an additional revenue stream, and has taxing authority. Impact Benefits Agreements, land payments and water payments are all revenue streams. • Financial returns exceeded community expectations. In 36 years of participation in the renewable energy sector from conception to operations of the Kwoiek Creek Hydro project, the Nation did not make revenues, so they did not enter into the project initially for the money. • Kanaka Bar has an economic and community development agreement so they get 1% of mineral tax revenues from highland valley copper, and also benefit from a gaming revenue sharing agreement with the province. These funds can be used to fund future projects. These are not insignificant amounts but Kanaka is a small band and gets revenues based on Nation size. • Skidegate Band Council: As they are in early phases of projects, they are not sure how revenues will be utilized but revenues may go back into the company for the next venture, as there will be times that the Nation will need its own financial contributions for future projects as they will not always be 100% funded. Revenues from the project go back into the company for the next venture. • West Moberly First Nations: the revenue stream from the wind project helps support the Nation. Money from the government for the Nation is limited.
Socio-economic regeneration	• Nation #1: once the 1 MW hydro is generating revenues all revenues will go to the Nation through the economic limited partnership corporation. This includes new infrastructure such as a Coast Guards facility, hotel and daycare center that all need electricity to run. The EPA revenue will help support that growth. People that visit the Nation can stay at these local accommodations and support local businesses. Economic development potential from the EPA revenue will help support the growth of new infrastructure and businesses in the community. • Nation #2: the project created economic development opportunities and was a tipping point for development from a small remote nation to an economic powerhouse. • Kanaka Bar Indian Band: worked with project partners to engage local labor and services on the project, reducing costs and creating economic opportunities for local businesses and workers. The Nation created Kanaka Bar Employment Services Ltd to be a future employer for the band. Without renewable energy projects the Nation would have nothing else. Until 2010 there was not much in the community, and 12 years later there are subdivisions, agriculture, and other renewable energy, and many own properties off reserve (declared an Indigenous and Protected Conserved Area for these lands). • Skidegate Band Council: Skidegate has been a growing Nation in the last 10 years, growing about 4% each year, aided by economic drivers that include clean energy projects. Clean energy projects have created employment opportunities, and the community wants to see more youth involved create careers for those entering the workforce and promote jobs and training that will be available on the islands. Bringing in organizations to do trades training (e.g., electricians, heavy equipment operators). • West Moberly First Nations: indirect economic development occurred when the construction stage for the wind farm brought people into the region to work and they used community services and businesses. Revenues from the wind project go to community programs such as education and culture camps, helping support elders, and youth programs (snowboard team). The Nation has a partnership with a company that has camps that people working on the wind project stayed in during the construction phase.

(Continued.)

Table 8. (Continued.)

Reduce noise, displace fossil fuels, cleaner air, fire hazard reduction	• Nation #1: cleaner air, less noise pollution, and reduced risk of oil spills. • Kanaka Bar Indian Band: revenues go towards forest fire hazard reduction and protecting people's homes. Renewable energy aligns with Kanaka's principles of sustainability, everything Kanaka does has a climate change lens, and considers if a decision will exacerbate climate change and how projects might help food, shelter, water, and energy resiliency. Ensure safety of future generations. • Skidegate Band Council: initiatives like the heat pump project get diesel out of the Nation. They used to see a full diesel truck everyday and now only see them a few times a year. • West Moberly First Nations: damage to the environment is minimal from wind towers, and the land is able to be reclaimed for other uses if the project ends. They would rather see wind towers on the territory than flare stacks from natural gas.
External networks, education/ awareness in external parties, visibility, influence, knowledge sharing, global niche development, reconciliation	• Nation #1 is involved in a working group, through which they share their Nation's experience and have helped to shape strategies being published by the Provincial government. • Nation #1: First Nations led clean energy projects are distinct because of the potential for self-determination, and they speak to the resilience of communities. 'If you want to know the impact of not having clean energy or energy provided by the system that is provided to the rest of the province. Those are the impacts. And so now we are not prepared to use the EPA revenue to re-pay a loan. We want reconciliation, and at the very least the reconciliation that we want is to have all of the electricity purchase agreement funds flow to the Nation #1 Development Corporation and any funds not required for the operations and maintenance of the system will go to the community for economic development. And you know, whatever else the community decides to put the money toward.' • Kanaka Bar Indian Band: In a presentation document published by the Nation, Kanaka Bar Indian Band has shared their story and demonstrated that Indigenous communities are able to work with industry and governments to develop positive relationships, with the result of shared prosperity for all. • Kanaka Bar Indian Band: projects brought contractors, scientists, engineers, to the Nation who worked alongside Nation members and inspired members that they could work in positions too when they saw that they were good people. • The traditional use study and archaeological study for the Kwoiek Creek Hydro Project confirmed that for more than 8000 years people had lived in the same spot. Traditional stories and knowledge married to empirical scientific data and confirms the community's 8000 years of land use and resource governance. • Experience with clean energy projects showed that by doing projects together, work, risks and benefits are shared through partnerships and meaningful relationships. Successful projects were built by team work and individual effort. • Skidegate Band Council: Clean energy projects have made community relationships stronger, especially with BC Hydro and Natural Resources Canada. Nation leadership has been able to work with all levels of staff and make the work more personable. As a result, Skidegate is now exploring programs like smart renewable electrification with battery systems on the BC Hydro grid that could create solutions for BC Hydro and the Nation for stable power. BC Hydro is now paying more attention to finding solutions to issues that might not have been a priority in the past. • Skidegate Band Council: worked with other First Nations and shared failures and successes. The Nation is always 100% open to sharing. Networks for First Nations people that Skidegate is now taking part in network groups such as the remote community energy strategy working group, Indigenous Climate Adaptation working group, and Indigenous coastal climate coalitions have been created. These organizations have brought people together through similar minds that want to share information. This mode of thinking established itself in the last 10 years—before that people were more reluctant to share. This was possibly a result of proposal-driven funding from governments that made communities competitive with each other. • Skidegate Band Council: Staff have traveled to Haida Gwaii and seen the work the Nation is doing and experienced the culture.

The summarized and overarching findings of anticipated and felt benefits across all Nations are outlined in table 9. These findings illustrate the context-specificity and diversity of impacts inherent to place-based approaches to renewable energy development.

Table 9. Summary of findings of self-reported benefits by First Nation.

Nation	Social cohesion, sense of pride, resurgence, recreation	Organizational learning, capacity building, setting precedent	Autonomy, independence, self- determination, empowerment, new imaginaries	Infrastructure, supply resilience, access to affordable electricity and healthy homes	Local procurement of materials and services	Training and employment	Project revenues	Socio-economic re-generation	Reduced noise, displace fossilfuels, cleaner air, fire hazard reduction, ecological benefits, reduce power consumption	External networks, education, awareness in external parties, visibility, influence, reconciliation, knowledge sharing, global niche development
Nations with operational & planned projects										
Nation #1	X	X	X	X	X	X	X	X	X	X
Nation #2	X			X		X	X	X		
Kanaka Bar Indian Band	X	X	X	X		X	X	X	X	X
Skidegate Band Council	X		X	X	X	X	X	X	X	X
West Moberly First Nations	X		X		X	X	X	X	X	
Nations with operational projects (none planned)										
Nation #3				X	X				X	
Heiltsuk Nation	X		X	X		X		X	X	X
Kitasoo Xai'Xais Nation	X		X	X	X	X			X	
Lytton First Nation			X	X						
Simpcw	X	X	X			X	X	X		X
Xa'xtsa Nation	X	X		X		X	X	X	X	
Nations with Planned Projects (None Operational)										
Kitsumkalum Band		X		X	X		X	X	X	
Ts'uubaa-asatx Nation	X						X			
Nuxalk Nation		X	X			X		X	X	X

5. Discussion

Drawing from these richly detailed self-reported impacts analyzed through a place-based lens, we draw several important findings.

We find that place-based approaches are fitting to outline the impacts of renewable energy projects for First Nations. The self-reported impacts reflect all five dimensions of place-based approaches to renewable energy projects reported in the literature, that are holistic and interconnected—Resurgence, Holistic and material, Place-attachment, Local value creation'and Transformative energy justice—outlined in table 1. From this perspective, we learned that many of these projects, described across nearly all First Nations that participated in the study, have contributed to a sense of belonging, a sense of pride, empowerment, language and history revitalization, or gathering people together, embracing traditional values and valuing local ecosystems in place. These findings suggest interdependencies across impacts, further demonstrating the value of place-based approaches for analysis. For example, all of the observed impacts contribute to self-determination, where renewable energy projects create opportunities for reasserting community values and priorities, through the implementation of initiatives to address local issues and opportunities, with many Nations reporting resurgence (connection to the natural world, cultural, economic, social and political scope) and a wide range of benefits felt across generations in the community.

Project ownership, scale and governance are all determining factors in shaping project revenues. The literature shows that there is a relationship between the governance structure of a community renewable energy project and the project impacts, although our understanding of how this relationship shapes outcomes remains poor (Berka and Creamer 2018, Slee 2020, Savic and Hoicka 2023). Our findings contrast with aspects of this literature, as they suggest that there are factors other than scale and ownership that affect the self-reporting of benefits. The 36 operational and planned projects in this study exhibit a broad range of governance structures with a wide range of shares of ownership, benefits and royalties agreements and project sizes (see table 4). Across all project ownership (including non-ownership) types of this sample, one of the most important observations was the presence of a wide variety of social, material, economic, ecological and relational impacts, ranging from language and cultural resurgence to ecological benefits and improved external relationships and awareness of First Nations realities and worldviews.

Our findings indicate that two processes strongly mediate the relationship between governance structure and impacts felt by the community: those for community engagement and for the allocation of revenues.

One nearly universal feature of these projects is what appears to be the strong and multifaceted community engagement prior to and during the project development (table 5), to provide information and knowledge to address concerns, demonstrate the socioeconomic benefits of the project and invite members into decision making around goals and siting. Many of these approaches were place-based and place-attached. For example, community gatherings, meals and meetings in local cafes were all reported. Some of the First Nations required project developers to lead community engagement initiatives and get to know the community as a requirement of the project. This is pronounced in its difference to the decide-announce-defend approaches that often result in project cancellation. These findings reinforce the breadth of literature showing that transparency in decision making and experiencing socioeconomic benefits improves project acceptance and outcomes.

We also learned about decision making processes for revenue allocation. The findings indicate that collective decision-making approaches around the allocation of project revenues affect the breadth and diversity of impacts and the capacity of renewable energy projects to support First Nation autonomy and self-determination. These findings serve as a reminder that for alignment with a First Nation's own goals and worldviews, participatory approaches and long-term community plans serve to guide prioritization and allocation of revenues to downstream initiatives, shaping the associated downstream impacts. For example, the interviews suggest that in at least three of the Nations interviewed, decision making is informed by strong community engagement and awareness and articulation of community principles and long-term plans. These findings point to the specific importance of collective decision making in the allocation of revenues (Smith and Scott 2021, Savic and Hoicka 2023).

The findings demonstrate the methodological value of employing co-created research design and open-ended questions to understand the impacts of renewable energy projects to First Nations. The semi-structured questions created space for Indigenous knowledge holders to share their narratives, worldviews and experiences that centered Indigenous perspectives and framings about their Nation's motivations, processes of project development and project impacts.

The interview recruitment process was supported by the project partner CEBC, which enabled us to recruit knowledge holders with extensive direct experiences with the projects. This allowed us to gather rich details about the projects. One limitation of this study is that there was generally one, and sometimes two, interviewee(s) per Nation, rather than in-depth interviews with a range of First Nation citizens (e.g. Chitsaz 2022). Most of these knowledge holders had a positive perception of the impacts of the project, which may have resulted in a positive bias in reporting of impacts. This study design aligns with previous research for advocacy for renewable energy policies supporting BC First Nations, such as Cook *et al* (2017) that surveyed over half of the 203 First Nations in BC. What is missing, though, are a wider range of voices across each First Nation that may not have shared the same perspectives on the project's impacts, leading to potential bias in the reported findings. One mitigating factor is that the ethics protocols required that the First Nation consented to the interview, sometimes selecting the interview participant so that interview participants did align with the First Nation governing body. Another mitigating factor is that these perspectives were supplemented with project documents that offered details of the projects and outcomes that may not be top of mind for an interview participant. Including a wider range of participants would have limited the ability of the study to represent a wide range of Nations and may not have been consented to by the participating Nations. Despite these perceived limitations, it is important to note that each interview was conducted independently of other interviews, and the findings show that many of the self-reported impacts occurred across several First Nations—few of the self-reported impacts were documented for a single First Nation (see table 9).

6. Conclusion

Renewable energy projects led and developed by First Nations offer benefits far beyond greenhouse gas emissions reduction. This co-created study, designed in collaboration with the project partners, presents empirically novel research that offers insights into how to embed transformative justice in energy transitions by using open-ended interview questions about community engagement and perceived impacts of renewable energy projects with 14 First Nations that are collectively pursuing 36 renewable energy projects. We consolidate findings around place-based approaches grounded in local values and place connections. These findings contribute to reimagining energy systems that contribute to transformative energy justice, based on the values and framings of First Nations. Transformative energy justice entails the centering of voices and worldviews of historically excluded communities in problem framing, decision making and transition processes (Elmallah *et al* 2022, Avelino *et al* 2024, Lembi *et al* 2025). Renewable energy projects led by a First Nation can offer land-based opportunities and uphold the Nation's social, political and legal orders and principles (Smith and Scott 2021). The findings of this study detail how many First Nations' experiences with renewable energy projects are infused with opportunities to reassert their priorities, worldviews and values contributing to their self-determination.

Our findings provide several insights and contributions to the theory and practice of place-based approaches to renewable energy projects and their fundamental connection to transformative energy justice. First, place-based approaches are fitting to outline the impacts of renewable energy projects for First Nations. Second, within a sample of a wide range of project sizes and technologies, the governance processes of deep community engagement and the collective decisions for allocation of revenues strongly mediate the positive and transformative impacts felt by the community. Taken collectively, these findings show that the ways in which impacts have been shaped by First Nations in renewable energy projects they are involved in strongly align with place-based strategies and transformative energy justice; these First Nations approaches to developing projects are place-based, ensuring a wide range of impacts to the community that can collectively contribute to transformative change.

Conventional policy approaches to renewable energy demonstrate a systematic neglect of social impacts and value in public policy making and procurement decisions (Lamb *et al* 2020), and the prevalence of 'decide-announce-defend' approach to project planning, in which projects are announced after the critical design and siting decisions have been made, and project proponents work to defend decisions in response to local opposition (Ducsik 1981, Wolsink 2000, Nilson *et al* 2024).

In the Province of BC, political importance has been placed on creating economic opportunity to counter external economic shocks such as Trumpian tariffs, to meet climate change targets, and to meet the Province's obligations under DRIPA, to allow economic opportunity for all 203 First Nations without discrimination. New procurement policies for renewable energy, that re-started in 2023, target renewable energy development with First Nations involvement. However, despite a requirement for 25% First Nations ownership in the projects under the procurement call, concerns are already being raised that 'decide-announce-defend' approaches are occurring in BC Hydro's 2024 call for power, and it is

not clear that the regulator, the BC Utilities Commission, has the tools to avoid this approach (Mason 2025). K'*o*moks First Nation has raised that the lack of consultation on a wind project development is infringing on their treaty rights. Doig River First Nation has raised that they were not consulted on investigative wind project licenses in their planning area (Mason 2025).

The study's findings underscores the importance of place-based approaches to institutions, policies and programs for First Nations led projects in energy transitions. The evidence indicates a way to meet the Province's obligations under DRIPA by offering insights to institutional, policy and program design. The interviewed First Nations in BC. are taking place-based approaches that contrast significantly with 'decide-announce-defend'. They are engaging, sometimes deeply, with First Nation community members in a wide range of decisions about the project and impact allocation. This study offers overwhelming evidence of the rich diversity of impacts generated from these approaches to decision making. These findings suggest that institutions, policies and programs should encourage design around local values to account for the significant and specific place connection of First Nations, and the opportunity to reassert Indigenous priorities through renewable energy projects processes and revenue allocation. The findings also suggest that policy decisions, and project and resource allocation, should consider as broad a range of impacts as our findings indicate.

Practically, policies, procurement and regulatory design should encourage and reward deep community engagement processes that align with supporting pride, empowerment and resurgence. In particular, policies, procurement and regulatory design should pay careful attention to how First Nations can make decisions collectively about the allocation of revenue that our findings indicate are inherent to the benefits that support First Nations' self-determination and resurgence. Other jurisdictions offer potential lessons: the European Union's renewable energy communities and citizen energy communities policy design offers examples of the alignment of renewable energy procurement policies with community-based decision making for allocating revenue to local benefits (Hoicka *et al* 2021b).

Data availability statement

The data cannot be made publicly available upon publication because they are owned by a third party and the terms of use prevent public distribution. The data that support the findings of this study are available upon reasonable request from the authors. Under OCAP(R) principles (ownership, control, access, possession) First Nations own their own data. We did not receive permission to share transcripts.

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